

rooms; and, hence, that there is no safety against the increase of the organism in ordinary living rooms in which active tuberculous dust is present, and in which the natural disinfectants of the bacillus, fresh air and light, are not present in sufficient amount to destroy their virulence.

“Summary of Professor Edgeworth David's Preliminary Report on the Results of the Boring in the Atoll of Funafuti.”
Communicated by Professor T. G. BONNEY, F.R.S., Vice-Chairman of the Coral Reef Boring Committee. Received November 25,—Read November 25, 1897.

The boring at Funafuti, according to the latest advices, had reached a depth of 643 feet. Professor David's report is transcribed from notes made during the progress of the work, and gives his first impressions of the materials brought up, down to a depth of 557 feet, which had been reached when he quitted the island to return to his duties at Sydney, leaving the work in charge of his assistant. The latest advices informed him that the boring was arrested at 643 feet, but as it was hoped this was only for a time, we are daily expecting to hear yet more gratifying news. His last letters, received during the present week, give a few particulars of the materials pierced between 557 and 643 feet. The work, Professor David states, often presented most serious difficulties, which would probably have frustrated their efforts, but for the experience gained on the former occasion.

The bore hole is situated about half a mile N.E. of the Mission Church, and its height above sea level is about 1 foot above high water mark at spring tides. The diameter is 5 inches down to 68 feet; it is lined with 5-inch tubing down to 118 feet, and 4-inch from surface to 520 feet, so that on September 6 a 4-inch core was being obtained.

The following is a general description of the materials pierced:—For about a yard at the top there was a hard coral breccia. This was followed down to a depth of 40 feet by “coral reef rock,” into the composition of which *Helicopora cerulea*, with spines of echinids and nullipores, entered largely, the last predominating over the coral at from 15 to 20 feet. From 40 to 200 feet came more or less sandy material, but with a variable quantity of corals. These were scattered through the sand (calcareous and of organic origin; foraminifera, at about 40 feet, making from one-half to two-thirds of the whole) sometimes as fragments (forming occasionally a kind of rubble), but sometimes in the position of growth. Between 120 and 130 feet, and from about 190 to 200 feet, the material

is described as fairly compact coral rock, so that very probably reefs *in situ*, though of no great thickness, were pierced at these depths. The sand appears to be largely derived from coral, but foraminifera occur, sometimes in abundance; so too do nullipores, and here and there spines of echinids. Towards 150 feet signs of change begin to appear in the corals, and these become more conspicuous as the boring approaches its greatest depth. In such case, if I understand rightly, some of the branching corals crumble away and are represented only by casts, while others remain, the surrounding matrix becoming solid, cemented apparently by calcite. Below 202 feet a decided change takes place in the character of the deposit. All above this seems to be largely composed of material derived from corals, with occasional rather brief interludes of true reef, and this mass, measuring, as said above, rather over 200 feet in thickness, may be termed the first or uppermost formation. Below this, down to about 373 feet, sandy material distinctly dominates, which sometimes is almost a calcareous mud. Still even there coral fragments and rubble occasionally appear, and now and then a few isolated corals. Other organisms may be detected, including nullipores, foraminifera, and mollusca; but until this material has been examined microscopically, it would be premature to attempt any precise statement. This mass, in thickness about 170 feet, may be termed the second or middle formation. It is not reef, though obviously produced in the vicinity of a reef. Below 370 feet is the third or lowest zone; in this beds composed of broken coral become frequent, which are intercalated with masses of dead coral, though sandy bands also occur. The character of the material suggests that it has been formed in the immediate vicinity of a reef, which has occasionally grown out laterally, though only for a time, and has built up a layer of true reef, from 2 to 3 feet in thickness, upon a mass of detrital coral. In one place the rock is specially noted as "hard," and hereabouts even the shells of gasteropods have perished, only their casts remaining. From 526 to 555 feet the bore passed through fairly compact and (in places) very dense and hard "coral limestone" and "cavernous coral rock," in which dendroid forms were numerous. As regards the part between 557 feet and 643 feet only brief information is to hand, but Professor David states that it is reported to be chiefly coral limestone, hard and dense, with occasional soft bands of coral sand or coral rubble. Thus the third, or lowest zone, about 270 feet in thickness, corresponds apparently with the first, but it seems to contain larger and more numerous masses of true reef.

Professor David has also forwarded with his latest letters a section of the boring and of the exterior form of the island, down to about 730 fathoms: the one drawn from his notebook, the other from Captain Field's record of soundings. From this I gather the

following particulars:—The borehole is, roughly speaking, rather over 100 yards from the margin of the ocean, and about 165 yards from that of the lagoon; it is about 240 yards from the spot where a sounding of 10 fathoms was obtained, nearly 400 yards from a 36-fathom sounding, and rather more than a quarter of a mile from one of 130 fathoms. After this the submarine slope, for a considerable depth, is not quite so steep. He also states that, at Funafuti, the vigorous growing portion of the reef appeared to be limited to within about 40 feet of the surface.

It would be premature, as Professor David remarks, to express an opinion as to the theoretical bearing of these results until the core has been thoroughly studied. But two things seem clear, (1) that true reef has been pierced at depths down to more than 600 feet, and (2) that throughout the whole of the time represented by the mass which has now been tested, coral must have grown in great abundance in some part or other of the locality now represented by Funafuti; for the atoll, it must be remembered, is surrounded by water about 2,000 fathoms deep, what would completely isolate it from any other coralliferous locality.

November 30, 1897,

Anniversary Meeting.

The LORD LISTER, F.R.C.S., D.C.L., President, in the Chair.

A full Report of the Anniversary Meeting, with the President's Address and Report of Council, will be found in the 'Year-book' for 1897-8.

The Account of the Appropriation of the Donation Fund and of the Government Grant will also be found in the 'Year-book.'